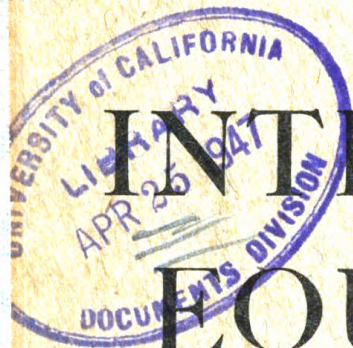


Vol 1113
12
TM
1944

TM11-702

WAR DEPARTMENT TECHNICAL MANUAL

U.S. Dept. of Army



INTERPHONE EQUIPMENT RC-99

RESTRICTED. DISSEMINATION OF RESTRICTED MATTER.—The information contained in restricted documents and the essential characteristics of restricted material may be given to any person known to be in the service of the United States and to persons of undoubted loyalty and discretion who are cooperating in Government work, but will not be communicated to the public or to the press except by authorized military public relations agencies. (See also par. 236, AR 380-5, 15 Mar 1944.)

WAR DEPARTMENT • 3 MAY 1944

TM 11-702.

INTERPHONE EQUIPMENT RC-99

A. G. 062.11 (11-23-43)

By order of the Secretary of War:

G. C. MARSHALL
Chief of Staff

Official:

J. A. ULIO,
Major General,
The Adjutant General.

Distribution:

D 17(2); IBn 11(3), 17(2); IC 11(2), 17(2).
(For explanation of symbols see FM 21-6)

INTERPHONE EQUIPMENT

R. C.-99



WAR DEPARTMENT

• 3 MAY 1944

RESTRICTED. DISSEMINATION OF RESTRICTED MATTER.

No person is entitled solely by virtue of his grade or position to knowledge or possession of classified matter. Such matter is entrusted only to those individuals whose official duties require such knowledge or possession.

(See also paragraph 23b, AR 380-5, 15 March 1944.)

U. S. Government Printing Office
Washington : 1945

How well
gift.
non cure

U113
15

TM 11-702 TM 11-702
1944

RESTRICTED

TECHNICAL MANUAL
NO. 11-702

★ ★
WAR DEPARTMENT
WASHINGTON
May 3, 1943

INTERPHONE EQUIPMENT RC-99

CONTENTS

	Paragraph
SECTION I. Description	
General - - - - -	1
List of Components- - - - -	2
Power - - - - -	3
II. Installation and Operation	
Installation- - - - -	4
Operation - - - - -	5
III. Functioning of Parts	
Mechanical Features - - - - -	6
Electrical Features - - - - -	7
IV. Maintenance	
General - - - - -	8
Repair- - - - -	9
V. Supplementary Data	
Tube VT-107 - - - - -	-10
List of Replaceable Parts - - - - -	-11
List of Manufacturers - - - - -	-12

ILLUSTRATIONS

Figure	Page
1 - RC-99 Components - - - - -	4
2 - Wiring Diagram RC-99 - - - - -	-10
3 - BC-367 - BC-667 Box and Chassis- - - - -	-12

Continued on Page 2

ILLUSTRATIONS (Continued)

Figure	Page
4 - BC-367 - BC-667 Assembly - - - - -	14
5 - Control Box - BC-606-D - - - - -	15
6 - Control Box - BC-739 - - - - -	16
7 - Circuit Diagram BC-367 - - - - -	18
8 - Circuit Diagram BC-667 - - - - -	18
9 - Circuit Diagram BC-606-D - - - - -	20
10 - Circuit Diagram BC-739 - - - - -	20
11 - Outline Drawing - BC-367 - BC-667 -	28
12 - Outline Drawing - BC-606-D - - - - -	29
13 - Outline Drawing - BC-739 - - - - -	30

DESTRUCTION OF ABANDONED MATERIEL IN THE COMBAT ZONE

In case it should become necessary to prevent the capture of this equipment, and when ordered to do so,

DESTROY IT SO THAT NO PART OF IT CAN BE SALVAGED,

RECOGNIZED, OR USED BY THE ENEMY, BURN ALL PAPERS

AND BOOKS

BY:-

1. Explosives, when provided.
2. Hammers, axes, sledges, or whatever heavy object is readily available.
3. Burning with gasoline, oil, paper, or wood.
4. Grenades and shots from available arms.

PROCEDURE:-

1. Obliterate all identifying marks. Destroy nameplates and circuit labels.

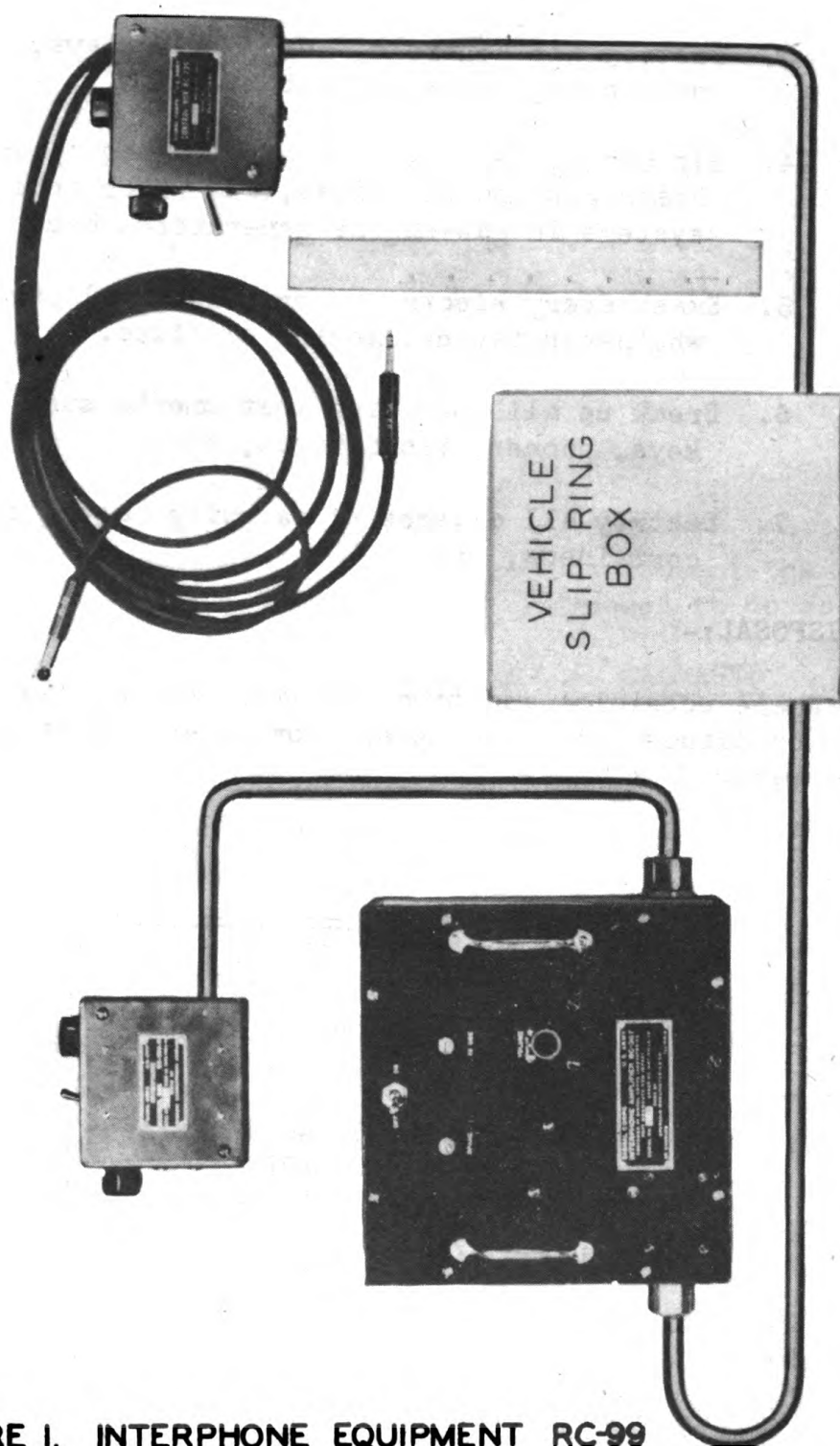
2. Demolish all panels, castings, switch-and instrument-boards.
3. Destroy all controls, switches, relays, connecting means and meters.
4. Rip out all wiring in electrical equipment. Smash gas and oil lines, and water cooling systems in gas-engine generators, etc.
5. Smash every electrical or mechanical part whether rotating, moving or fixed.
6. Break up all operating instruments such as keys, phones, microphones, etc.
7. Destroy all classes of carrying cases, straps, containers, etc.

DISPOSAL:-

Where possible, and time permits, bury all debris or dispose of it in streams or other bodies of water.

SAFETY NOTICE

THIS EQUIPMENT EMPLOYS VOLTAGES
WHICH ARE HIGH ENOUGH TO CAUSE
SEVERE SHOCK IF TOUCHED. BE
CAREFUL WHEN ADJUSTING OR REPAIR-
ING THIS EQUIPMENT



**FIGURE I. INTERPHONE EQUIPMENT RC-99
PRINCIPAL COMPONENTS.**

INTERPHONE EQUIPMENT RC-99

SECTION I

DESCRIPTION

	Paragraph
General - - - - -	1
List of Components- - - - -	2
Power - - - - -	3

1. **GENERAL** - Interphone Equipment RC-99 is a multi-station, intra-vehicular communication system for use in various types of mobile units. In addition to providing voice communication between all members of the vehicular crew, the interphone equipment enables the radio operator and vehicle commander to retain partial control of the vehicular radio apparatus for inter-vehicular and base-station voice communication.

2. **LIST OF COMPONENTS** - See Page 6 and 7 for complete chart showing list of components.

3. **POWER**

a. Input

(1) Interphone Amplifier BC-367 - The primary source of power required to operate the interphone equipment is the 12-volt, vehicular storage battery (not an interphone component). Normal storage battery current consumption of the interphone equipment is 3.2 to 3.75 amperes.

(2) Interphone Amplifier BC-667 - The primary source of power required to operate the interphone equipment is the 24-volt, vehicular storage battery (not an interphone component). Normal storage battery current consumption of the interphone equipment is 1.75 to 2.1 amperes.

b. Output - Interphone Amplifier BC-367 (or BC-667) has a nominal output rating of 2 watts.

SIGNAL CORPS

PART LIST FOR INTERPHONE EQUIPMENT RC-99							
ARTICLE	WEIGHT	VEHICLE COMBING DIAGRAM VOLTAGE					
		SC-D- LIGHT TANK M6 12 VOLTS	SC-D- LIGHT TANK M6A1 12 VOLTS	SC-D- MEDIUM TANK M4 TO M4A4 24 VOLTS	SC-D-8622 MEDIUM ARMORED CAR M6 (T17) 24 VOLTS	SC-D-8636 MEDIUM ARMORED CAR M6 (T17E1) 24 VOLTS	SC-D-8460 ARMORED CAR T18 24 VOLTS
BRUSH, H.V., DYNAMOTOR DM-25A; SPARE	$\frac{1}{2}$ lb.	4	4	0	0	0	0
BRUSH, L.V., FOR DYNAMOTOR DM-25A; SPARE		4	4	0	0	0	0
BRUSH, H.V., FOR DYNAMOTOR DM-45A; SPARE		0	0	4	4	4	4
BRUSH, L.V., FOR DYNAMOTOR DM-45A; SPARE		0	0	4	4	4	4
CONNECTOR AND BORDNUT, APPLETON ELECTRIC COMPANY #41007 AND BL-50 RESPECTIVELY, OR EQUAL		4	5	5	5	4	4
CONTROL BOX BC-739, INCLUDES NECESSARY MOUNTING SCREWS, LOCK- WASHERS, CLAMPS, HOOPS ETC.	$2\frac{1}{2}$ lb.	1	1	1	2	2	2
CORD CD-307-A OR CD-307 (.66" LONG, FOR HEADSET HS-30-())		3	3	4	4	4	4
CORD CD-316 (FOR MICROPHONE I-30-())		3	3	4	4	4	4
CORD CD-604 (FOR HEADSET HS-30-()) (NOTE 1)		3	3	4	4	4	4
CODRAGE CO-213 (INTERPHONE CODRAGES)		30 Ft.	26 Ft.	26 Ft.	27 Ft.	31 Ft.	24 Ft.
FUSE FU-21-A; SPARE (10 AMP. FOR INTERPHONE AMPLIFIER BC-367 OR BC-667)		4	4	4	4	4	4
HEADSET HS-30-() (NOTE 1)		3	3	4	4	4	4

INTERPHONE EQUIPMENT RC-99

	1	1	1	1	1	1	1	1	1	1
INSTRUCTIONS, INSTALLATION OF INTERPHONE EQUIPMENT RC-99										
INSTRUCTIONS, TECHNICAL MANUAL TM 11-702										
INTERPHONE AMPLIFIER BC-367, 12 VOLTS, INCLUDES: ONE DYNAMOTOR DM-26A	1	1	0	0	0	0	0	0	0	0
INTERPHONE AMPLIFIER BC-667, 24 VOLTS, INCLUDES: ONE DYNAMOTOR DM-45A	0	0	1	1	1	1	1	1	1	1
INTERPHONE CONTROL BOX BC-606-D, INCLUDES NECESSARY MOUNTING SCREWS, LOCKWASHERS, CLAMPS, HOOKS, ETC.	2	3	3	2	2	2	2	2	2	2
LOCKWASHER, 1/4" STD. STEEL, ZINC PLATED (FOR INTERPHONE AMPLIFIER)	6	6	6	6	6	6	6	6	6	6
MICROPHONE T-30-() (NOTE 1)	3	3	4	4	4	4	4	4	4	4
NUT, HEX, 1/4"-20, STEEL, ZINC PLATED (FOR INTERPHONE AMPLIFIER BC-367 OR BC-667)	6	6	6	6	6	6	6	6	6	6
WASHER, REDUCING, THOMAS & BETTS NO. 3703, OR EQUAL (FOR CONNECTOR AND BORENUT)	4	4	4	4	4	4	4	4	4	4
SCREW, MACHINE, ROUND HEAD, 1/4"-20 x 1-1/4", STEEL, ZINC PLATED (FOR INTERPHONE AMPLIFIER BC-367 OR BC-667)	6	6	6	6	6	6	6	6	6	6
TUBE VT-107, 2 IN USE (NOTE 3 AND 4)	6	6	6	6	6	6	6	6	6	6

NOTES

1. SUBSTITUTIONS, (IF ITEMS SHOWN ON PARTS LIST ARE NOT AVAILABLE, THE FOLLOWING SUBSTITUTIONS MAY BE MADE:
HEADSET HS-30-A PLUS CORD CD-604 PLUS CORD CD-307-A (65" LONG) IS EQUIVALENT TO HEADSET HS-18 PLUS CORD CD-307-A (65" LONG) (TANKS AND ARMORED CABS)

2. MICROPHONE T-30-A THROUGH T-30-R AND T-30-K THROUGH T-30-W MAY BE ISSUED.

3. THREE TUBES VT-107 ARE TO BE INSTALLED IN INTERPHONE AMPLIFIER BC-367 OR BC-667 BEFORE ISSUANCE OF THE AMPLIFIER TO THE USING ORGANIZATIONS; TWO IN AMPLIFIER CIRCUIT AND ONE IN SPARE SOCKET.

4. VACUUM TUBE VT-107-A MAY BE SUBSTITUTED.

SIGNAL CORPS

SECTION II

INSTALLATION AND OPERATION

	Paragraph
Installation- - - - -	4
Operation - - - - -	5

4. **INSTALLATION** - For complete information on the proper installation of Interphone Equipment RC-99 in a vehicle, consult the "Installation Instructions" for that particular vehicle.

5. **OPERATION** - Insert Headsets HS-30 in all phone jacks of the system. Insert a Microphone T-30-A in all microphone jacks of the system.

a. Operation of Interphone System

(1) Set the off-on switch of the interphone amplifier to ON, and allow time for the tube filaments to warm up (usually about 25 seconds).

(2) Switch the radio-interphone selector switch on Control Box BC-739 to INTERPHONE. Throw the signal switch on all Control Boxes BC-606-D to RADIO.

(3) Adjust all volume controls on the individual boxes to maximum and reverse approximately one-quarter turn. Press any of the microphone buttons; determine whether the dynamotor starts and if a slight hum is heard in all headsets. Speak into the microphone in a normal tone of voice; this should cause the amplifier output to be heard in all headsets.

(4) To adjust the volume of the interphone amplifier, insert a screw driver through the opening marked VOLUME (on the front panel) and rotate the shaft of the volume control. Turning the shaft (to the right) will increase the volume. Adjust the volume so that the output is at a suitable level. Keep the volume below the level at which the headsets rattle.

INTERPHONE EQUIPMENT RC-99

(5) Start the engine of the vehicle and when it is creating an adequate noise level, check the operation of the amplifier. Speak into the microphone more forcefully in order to override the increased background noise. If the volume is too high, readjust the amplifier volume control to a more comfortable level. Check the output of all the headsets to see that they are operating satisfactorily.

(6) Microphone T-30-A should be strapped comfortably around the throat, above the larynx, for proper operation. Talk naturally - DO NOT SHOUT.

b. Operation of Signal System

(1) Attach the two plugs of Control Box BC-739 to the radio set. Turn the radio set on.

(2) Tune in a strong signal on the radio receiver and adjust the commander's volume control on Control Box BC-739 so that the signal received in the commander's headset is at a comfortable volume level.

(3) Press the microphone switch at the driver's position in order to start the dynamotor in the interphone amplifier.

(4) Throw the RADIO-INT. switch on Control Box BC-606D from the RADIO side to the INT side.

(5) This causes an audio signal in the radio output which will be heard by the commander as a side-tone to his radio reception. If the commander desires to interrupt his radio reception, he operates his INTERPHONE-RADIO selector switch to INTERPHONE and carries on the desired conversation with the driver.

c. General

(1) Headsets HS-30 should be checked occasionally to maintain proper operating conditions. A simple way to check them is to listen to each of the headset receivers independently while someone is speaking on the interphone system. Both receivers

SIGNAL CORPS

should be approximately the same strength. If the entire headset response is believed to be weak, it may be compared with that of another headset known to be satisfactory. Care must be exercised in the operation of the interphone system to prevent damage to the headphones. Continued chattering of the headphones, caused by excessive volume output, will damage them if it happens over a long period of time.

(2) The filament switch of the interphone amplifier should be turned off at the end of the operation of the vehicle.

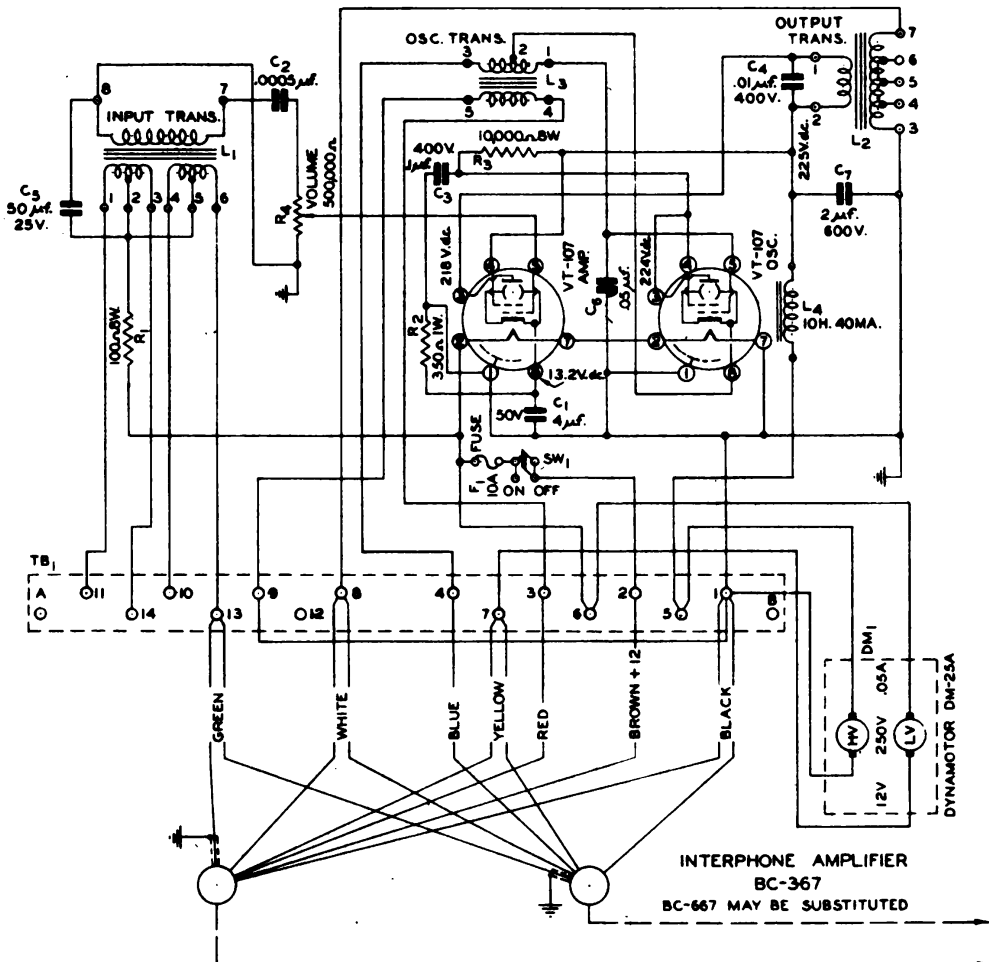


FIGURE 2 - INTERPHONE EQUIPMENT RC-99, WIRING DIAGRAM.

INTERPHONE EQUIPMENT RC-99

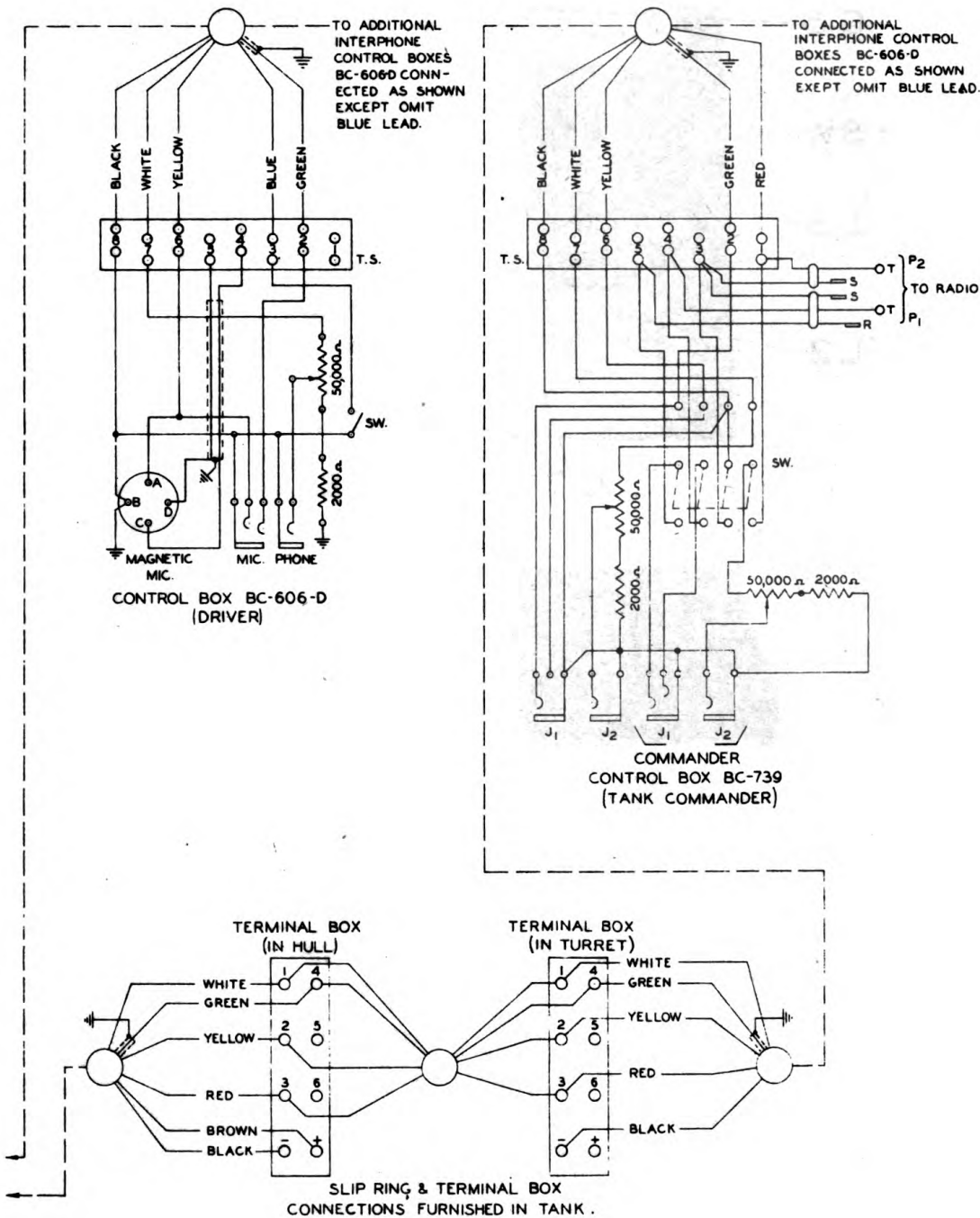


FIGURE 2-INTERPHONE EQUIPMENT RC-99, WIRING DIAGRAM

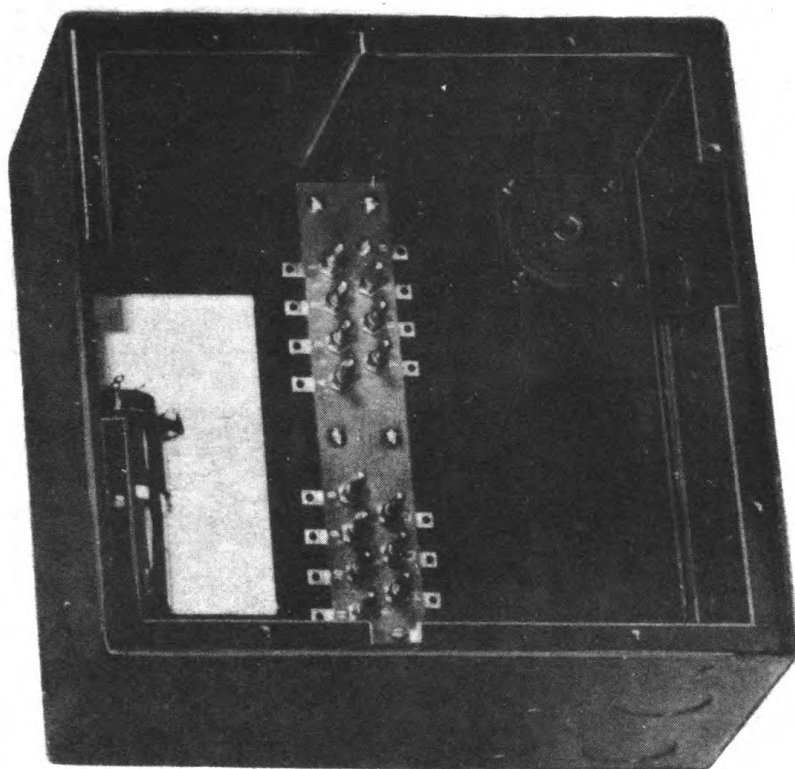
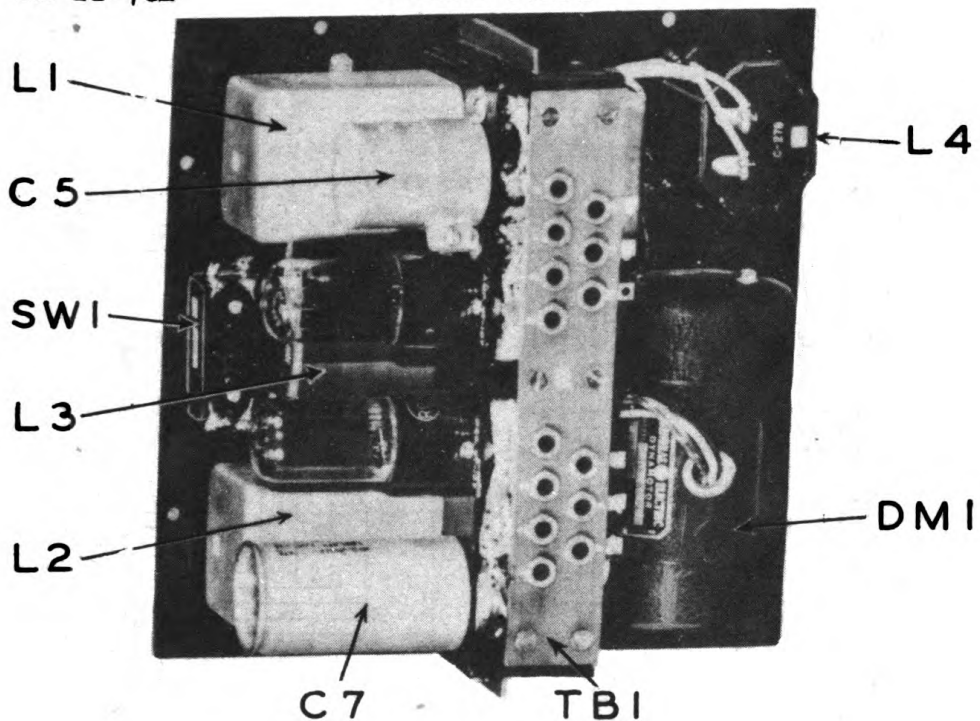


FIGURE 3. BOX & CHASSIS BC-367, BC-667

INTERPHONE EQUIPMENT RC-99

SECTION III

FUNCTIONING OF PARTS

	Paragraph
Mechanical Features- - - - -	6
Electrical Features- - - - -	7

6. MECHANICAL FEATURES - The major components, which are all housed in steel boxes, are mounted directly on the body of the vehicle. All of the control equipment, except Interphone Amplifier BC-367 (or BC-667) is permanently mounted and wired to the terminal blocks in each box. Interphone Amplifier BC-367 (or BC-667) has rubber shock-mountings and is a "plug-in" type for convenience in servicing. All units are interconnected by multi-conductor rubber covered cables that are attached to the vehicle with clamps. The various wires in these cables are soldered to the terminal blocks of the units.

a. Interphone Amplifier BC-367 (or BC-667)
(Fig. 3)

(1) Panel and Chassis Assembly - This unit consists of a panel and tube chassis assembly fitted into the box assembly. The panel and chassis assembly consists of a tube shelf riveted to a steel front panel which is approximately 8-3/4 inches long by 8-3/4 inches wide.

The front panel provides the mounting for the dynamotor and its associated filter, an off-on switch, two fuse posts and an opening for adjustment of the volume control. On the tube shelf are mounted two beam power amplifier Tubes VT-107 (or VT-107-A); one input transformer; one output transformer; one oscillator transformer; and two capacitors. The volume control is mounted on the bracket supported from the tube shelf and consists of a 500,000-ohm potentiometer equipped with a special slotted-shaft which may be adjusted through the panel with a screw driver. A spring provides friction on

SIGNAL CORPS

the slotted shaft to prevent turning under vibration. A plug terminal board is mounted on brackets which are attached to the tube shelf.

(2) Box Assembly - The box assembly consists of a steel box approximately 8-3/4 inches long by 8-3/4 inches wide by 4-1/2 inches deep, in the bottom of which is mounted a 14-point terminal block. The external interconnecting wires of the system terminate at this block. Two guide angles are provided on the sides of the box to assure proper alignment of the plug strip on the chassis when it enters the jack strip on the box. The back of the box contains four rubber shock-mountings. The amplifier is mounted on the vehicle by means of bolts through these four rubber mountings.

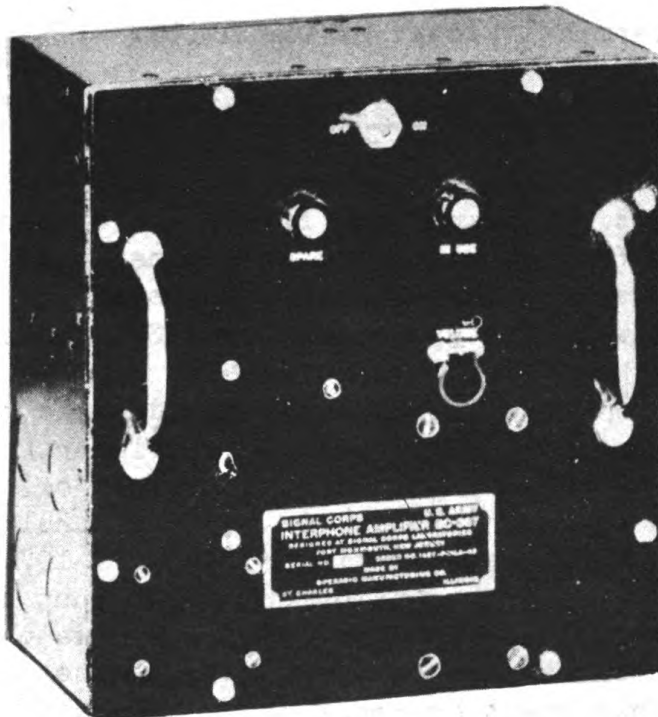


FIGURE 4,

ASSEMBLY BC-367

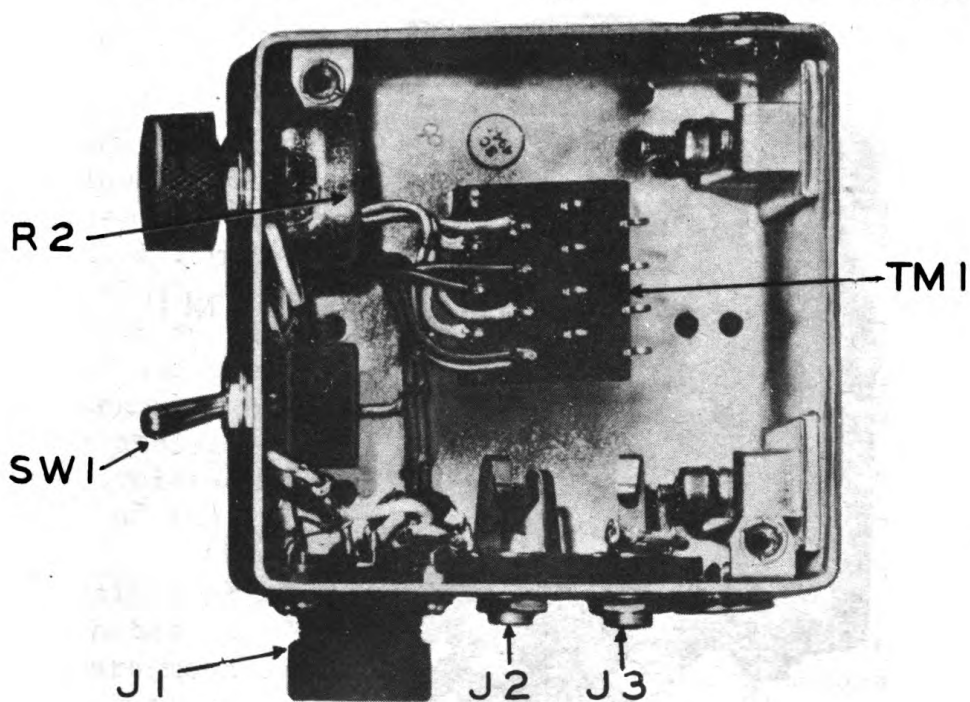


FIGURE 5

CONTROL BOX BC-606-D
-15-

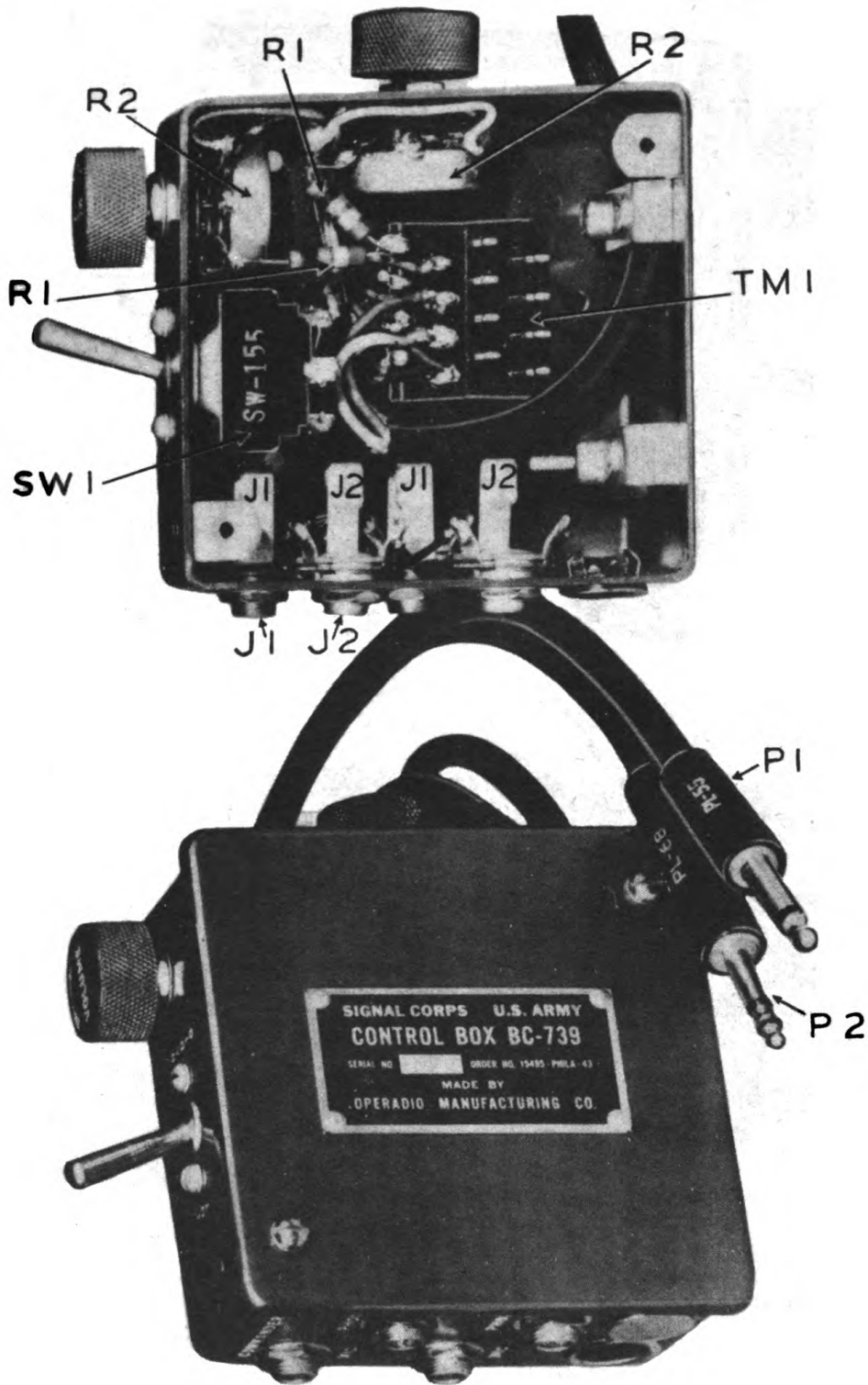


FIGURE 6. CONTROL BOX BC-739

INTERPHONE EQUIPMENT RC-99

(3) Control Box BC-606-D - (Fig. 5) -

This unit consists of a formed steel box approximately 4 inches long by 4 inches wide by 2 inches deep, complete with cover. In it are mounted one 50,000 - ohm potentiometer for control of volume; one single pole, single-throw switch; one four-contact receptacle for a magnetic microphone; two jacks, one for a headset and one for a microphone; and one multi-contact terminal block which is used to connect the unit to the cables running to the rest of the system. Three eyeleted holes are provided for convenient entrance of the interconnecting cables.

(4) Control Box BC-739 - (See Fig. 6) -

This unit consists of a formed steel box approximately 4 inches long by 4 inches wide by 2 inches deep. In it are mounted two 50,000 - ohm potentiometers for the control of volume; one four pole double throw switch for interphone-radio transfer; four jacks, two for headsets and two for microphones; one multi-contact terminal block to connect the unit to the rest of the system; and two plugs on 6 foot external cords that are used to properly connect the box to the radio equipment. Two eyeleted holes are provided for entrance of interconnecting cables.

7. ELECTRICAL FEATURES

a. Interphone Amplifier BC-367 - (See Fig. 7 For Circuit Diagram)

(1) Amplifier Circuit - The amplifier is of the transformer-coupled type and provides a maximum output of over 2-watts. The rising fidelity characteristic (attenuation at lower frequencies) from 100 to 2,500 cycles, tends to compensate for the poor high-frequency response of Microphone T-30-A and to prevent excessive noise pick-up. The input transformer consists of a two-winding primary with each winding center tapped, and a single-wound secondary. The audio-frequency voltage, after being stepped up by the input transformer, is applied through a potentiometer volume control to the grid of

SIGNAL CORPS

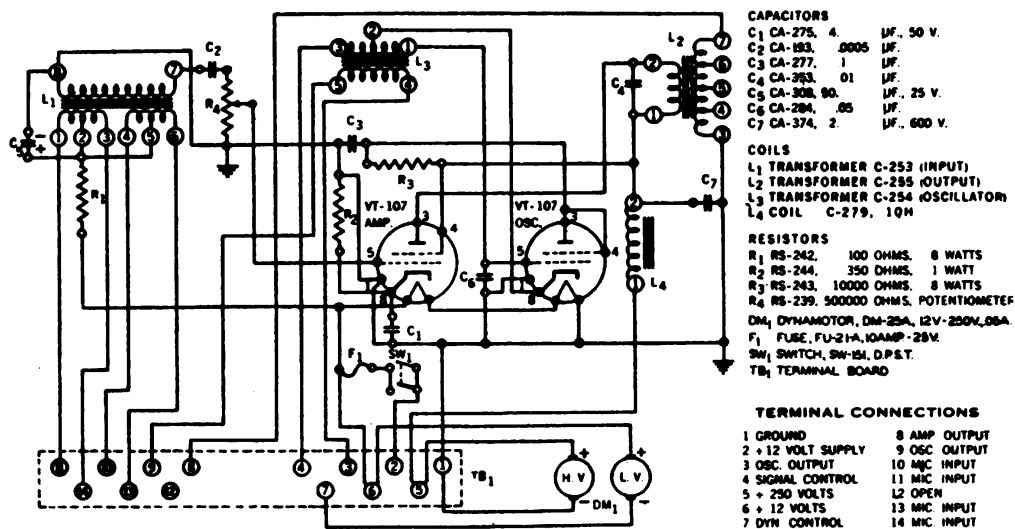


Figure 7. - Circuit Diagram for
Interphone Amplifier BC-367

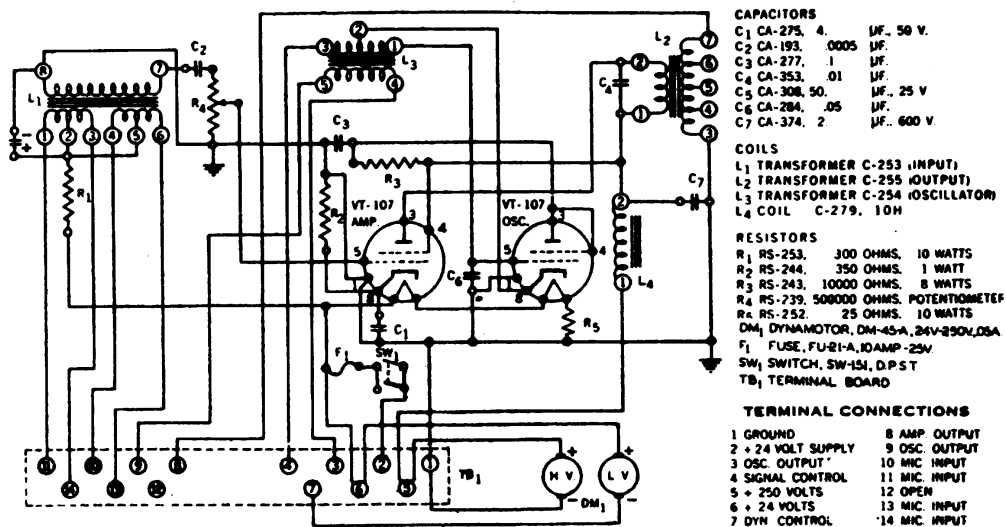


Figure 8. - Circuit Diagram for
Interphone Amplifier BC-667

INTERPHONE EQUIPMENT RC-99

the amplifier tube. The output of this tube appears across the secondary of the output transformer. Various output impedances of this transformer can be obtained by use of the proper tap. The amplifier is shipped with an output impedance of 2,500 ohms in use. The d-c microphone current is obtained from the vehicle battery source through a 100-ohm dropping resistor. A 50 μ f 25-volt electrolytic capacitor bypasses the audio component of the microphone current through the dropping resistor.

(2) Oscillator Circuit - The oscillator circuit is used to generate an audio signal of approximately 600 cycles to provide a means for the driver to signal when he wishes to speak to anyone on the radio side of the system. When the driver's switch is thrown, this audio voltage is impressed across the output of the radio receiver.

In the oscillator circuit, the grid is inductively coupled to the plate and tuned by a 0.05 μ f capacitor across the grid and ground. Tube VT-107 (or VT-107-A) is a beam power amplifier with screen and plate connected together to form a triode. The oscillator transformer has a secondary winding which is connected to the output of the radio receiver.

(3) Power Supply Circuit - The plate and screen voltages for both the amplifier and oscillator circuits are obtained by the use of a dynamotor mounted on the front panel of the interphone amplifier chassis. The negative low voltage terminal of this dynamotor is kept above ground potential and is used as the dynamotor control lead. Pressing any microphone switch connects it to ground, thus starting the dynamotor. A filter unit, consisting of a 10 Henry choke coil with a 2 μ f paper capacitor across the load side, is mounted on the front panel of the interphone amplifier chassis and provides filtered direct current for the tube plates and screens. The filaments of Tubes VT-107 (or VT-107-A) are connected in series across the battery supply.

SIGNAL CORPS

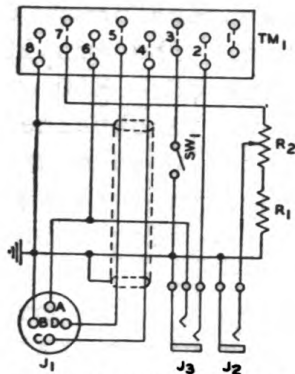


Fig. 9
Circuit Diagram
Control Box BC-606-D

- J₁ RECEPTACLE (MAGNETIC MICROPHONE)
J₂ JACK JK-34-A (PHONE)
J₃ JACK JK-33-A (MICROPHONE)
R₁ RESISTOR 2000 Ω $\frac{1}{2}$ WATT
R₂ POTENTIOMETER 50000 Ω
SW₁ SWITCH
TM₁ TERMINAL STRIP

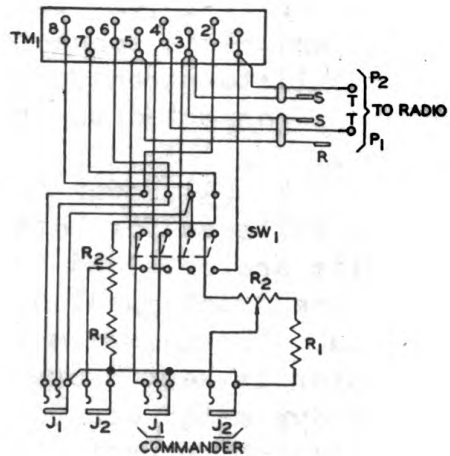


Fig. 10
Circuit Diagram
Control Box BC-739

- | | | |
|-----------------|----------------|----------------------------------|
| J ₁ | JACK | JK-43 (MIC) |
| J ₂ | JACK | JK-44 (PHONE) |
| P ₁ | PLUG | PL-68 |
| P ₂ | PLUG | PL-55 |
| R ₁ | RESISTOR | RS-126; 2000Ω $\frac{1}{2}$ WATT |
| R ₂ | POTENTIOMETER | RS-() 50,000Ω |
| SW ₁ | SWITCH | SW-155 |
| TM ₁ | TERMINAL BLOCK | TB |

INTERPHONE EQUIPMENT RC-99

b. Interphone Amplifier BC-667 - (See Fig. 8 For Circuit Diagram) - The electrical features of Interphone Amplifier BC-667 are identical to those of the BC-367 except for the following. As Interphone Amplifier BC-667 is to be used on a 24-volt system, it is necessary to construct the unit to operate on this higher voltage. This is accomplished by changing Dynamotor DM-25A to DM-45A, adding a series dropping resistor R5 to the filament circuit and increasing the resistance of the microphone current dropping resistor R1.

c. Control Box BC-606-D - (See Fig. 9 For Circuit Diagram) - Control Box BC-606-D is used in a system to enable one member of the vehicle personnel to plug his headset and microphone into the jacks provided and thus be connected to the interphone system. The volume potentiometer is wired across the incoming signal line. The single pole, single-throw switch when thrown to the INT side, grounds the cathode circuit of the oscillator tube (in the interphone amplifier) and causes an audio signal to be set up in the radio output circuit when the amplifier is energized by the closing of the "press-to-talk" switch on the microphone. A four-contact receptacle is provided for a magnetic microphone, but as this type of microphone is not used on Interphone Equipment RC-99, this receptacle is left covered with the screw cap provided.

d. Control Box BC-739 - (See Fig. 10 For Circuit Diagram) - This control box is wired so that the commander can be switched to either the radio system or the interphone system by means of the four pole, double-throw switch. A potentiometer is provided to control the output from the radio or interphone amplifier. In addition to the two jacks provided for the commander, another set of headset and microphone jacks is provided for an additional member of the vehicle personnel. This set of jacks is wired into the interphone system only and a volume potentiometer is provided to regulate the amount of signal to the headset.

SIGNAL CORPS

SECTION IV

MAINTENANCE

	Paragraph
General- - - - -	8
Repair - - - - -	9

8. GENERAL - If the component units of interphone equipment are properly installed and interconnected, little or no maintenance will be required.

9. REPAIR - Low volume at any listening position indicates trouble in the amplifier circuit or the interconnecting circuits. When difficulty is experienced with the amplifier, the first step is to check the vacuum tubes. If the tubes are normal, check the output voltage at the headset jacks with Test Set I-56, I-56A, or I-56C. The measurements are made as follows:

a. Using any standard audio frequency oscillator, apply 0.5 volts, 1,000 cycle a-c at any microphone jack of the system.

b. With Control Box BC-739 changeover switch set at INTERPHONE and the system operating, the voltage at any headset jack should be about 75 volts.

c. With Control Box BC-739 changeover switch set at RADIO, the signal switch on the driver's Control Box BC-606-D set at INT, the voltage at the commander's headset jack should be approximately 22 volts.

d. If trouble is found in the amplifier chassis assembly, replace the defective unit.

e. Repairs other than replacing defective tubes should not be attempted except by authorized Signal Corps repair shops and radio repair sections.

INTERPHONE EQUIPMENT RC-99

SECTION V

SUPPLEMENTARY DATA

	Paragraph
Tube VT-107- - - - -	10
List of Replaceable Parts- - - - -	11
List of Manufacturers- - - - -	12

10. TUBE VT-107 (OR VT-107-A) - Typical operating characteristics for Tube VT-107 (Commercial 6V6) operating as a pentode:

Heater Voltage (A-c or D-c) - - - - -	6.3 volts
Heater Current- - - - -	0.45 ampere
Plate Voltage (Typical Operation) - - - - -	250 volts
Screen Voltage- - - - -	250 volts
Grid Bias - - - - -	-12.5 volts
Plate Current (Zero Signal) - - - - -	45.0 ma
Screen Current (Zero Signal)- - - - -	-4.5 ma
Plate Resistance- - - - -	52,000 ohms
Transconductance- - - - -	4,100 micromhos

NOTE: Tube VT-107-A (Commercial 6V6-GT) may be substituted for Tube VT-107 (Commercial 6V6)

SIGNAL CORPS

11. TABLE OF REPLACEABLE PARTS
a. List of Parts, Interphone Equipment EC-99

REF. NO.	SIGNAL CORPS STOCK NUMBER	NAME OF PART	DESCRIPTION	FUNCTION	MFR. CODE	CONTN'T'S DWG. OR PART NO.
	20669-739	Control Box EC-739	66" Long	For Headset HS-30-(*)		
	3E1307A	Cord CD-307-A or CD-307		For Microphone T-30-(*)		
	3E1318	Cord CD-318		For Headset HS-30-(*)		
		Cord CD-804		For Interphone		
	3E2213	Cordage CO-213	10 Amp., 25 V., 5 Sec. Delay	Spare		
	3Z1921A	Fuse FU-21-A				
		Headset HS-30-(*)				
	2C1814	Interphone Amplifier EC-367 (12 volts) Brush H.V. Brush L.V.	For Dynamotor DM-25A For Dynamotor DM-75A	Spare Spare		
	2C1637	Interphone Amplifier EC-667 (24 volts) Brush H.V. Brush L.V.	For Dynamotor DM-45A For Dynamotor DM-45A	Spare Spare		
	6Z3147	Connector and Headmut				
	2C1730B	Control Box EC-606-B				
	2B1630A	Microphone T-30-(*)				
	2T107	Tube VT-107	(R.C.A. 6Y6, or equal)			

* INDICATES THE APPLICABLE SUFFIX LETTER

INTERPHONE EQUIPMENT RC-99

b. Interphone Amplifier RC-267 and RC-667

REFERENCE NO.	STOCK NO.	NAME	DESCRIPTION	FUNCTION	MPGR.	MANUFACTURER'S PT. NO.	SIGNAL CORPS DRAWING NO.
C ₁	3D276	Capacitor CA-276	Fixed, Paper, 4.0 μ f 50 v. d-c	Bias capacitor	C-P		SC-D-612
C ₂	3D193	Capacitor CA-193	Fixed, Mica, 0.0005 μ f 250 v. d-c	Bleeding capacitor	M		SC-D-1993
C ₃	3D277	Capacitor CA-277	Fixed, Paper, 0.1 μ f 400 v. d-c	Filter capacitor	M		SC-D-1996
C ₄	3D353	Capacitor CA-353	Fixed, Paper, 0.01 μ f 400 v. d-c	Bypass capacitor	M		SC-D-1996
C ₅	3D308	Capacitor CA-308	Electrolytic, 50 μ f 25 v. d-c	Bypass capacitor	A		SC-D-2346
C ₆	3D284	Capacitor CA-284	Fixed, Paper, 0.05 μ f 400 v. d-c	Oscillator tuning capacitor	M		SC-D-1996
C ₇	3D374	Capacitor CA-374	Fixed, Paper, 2.0 μ f 600 v. d-c	Filter capacitor	C-D		
SW ₁ (RC-367)	3E1625-A	Dynamotor MM-25A	12 v. input; 0.05 amp., 250 v. output	Plate supply	W-G		SC-D-4366
SW ₁ (RC-667)	3E1615-A	Dynamotor MM-48A	24 v. input; 0.05 amp., 250 v. output	Plate supply	W-G		SC-D-6266
F ₁	323921-A	Fuse FU-21-A	10 amp., 25 v., 5-sec. delay	Supply fuse	LL		
L ₁	259677	Transformer C-263	Primary resistance, terminals 1-3 and 4-6 70 ohms max.; turns ratio; secondary winding to each primary winding 10 to 1	Input transformer	C.T.		SC-D-4366
L ₂	259675	Transformer C-266	Primary resistance 210 ohms max.; secondary resistance, terminals 3-7, 190 ohms max.	Output transformer	C.T.		SC-D-4366
L ₃	259674	Transformer C-264	Primary resistance, terminals 1-2, 45 ohms max.; terminals 2-3, 115 ohms max.; secondary resistance, terminals 4-6, 215 ohms max.	Oscillator transformer	C.T.		SC-D-4364
L ₄	3D-279	Coil C-279	Iron core, 10 henrys, 50 ma., 500 ohms max.	Filter choke	C.T.		SC-D-4347
R ₁ (RC-367)	321612	Resistor R2-242	Wire-wound, 100 ohms, 8-w.	Dropping resistor	IRC		RL-D-6223
R ₁ (RC-667)	321653	Resistor R2-253	Wire-wound, 200 ohms, 10-w.	Dropping resistor	IRC		RL-D-6223
R ₂	321614	Resistor R2-244	Molded, 350 ohms, 1-w.	Bias resistor	IRC		SC-D-970
R ₃	321613	Resistor R2-243	Wire-wound, 10,000 ohms, 8-w.	Dropping resistor	IRC		RL-D-6223
R ₄	257295-1	Potentiometer R2-239	Linear, 500,000 ohms	Gain control	CTS		SC-D-1992
R ₅ (RC-667)	321652	Resistor R2-262	Wire-wound, 25 ohms, 10-w.	Dropping resistor	IRC		RL-D-6223
SW ₁	220659-6	Socket	8 Prong, octal	Tube socket	AP		
	328151	Switch SW-151	Toggle, D.P. 3.T.	Power switch	C-E		SC-D-4187
	2291611	Terminal Strip (Male)	Phenolic plate, 14 terminals	Connection board	CP		SC-D-4361-Gr-1
TR ₁	2291611	Terminal Strip (Female)	Phenolic plate, 14 terminals	Connection board	CP		SC-D-4361-Gr-2

SIGNAL CORPS

c. Control Box BC-606-D

REFERENCE NO.	STOCK NO.	NAME	DESCRIPTION	FUNCTION	MPOR.	MANUFACTURER'S PT. NO.	SIGNAL CORPS DRAWING NO.
T ₁	229468	Terminal strip	Bakelite, 8 terminals	Connection board	W.E.	700-A	
R ₂	227288-3	Potentiometer	Linear, 50,000-ohms	Gain control	INC		
R ₁		Resistor	Carbon, 2,000-ohm, 1/2-w.	Dropping resistor	INC		
J ₁	206494A/42	Receptacle and cap	4-contact	Magnetic microphone	OP	14425	
J ₂ & J ₃	201799A/31	Jack assembly	Combination mic. & phone jack	Input & output	OP	BS678690-4	
SW ₁		Switch	Toggle, S.P. S.T.	Signaling	AMH	86994-AB	

d. Control Box BC-739

REFERENCE NO.	STOCK NO.	NAME	DESCRIPTION	FUNCTION	MPOR.	MANUFACTURER'S PT. NO.	SIGNAL CORPS DRAWING NO.
T ₁	229468	Terminal strip	Bakelite, 8 terminals	Connection board	W.E.	700-A	
R ₂	227288-3	Potentiometer	Linear, 50,000-ohms	Gain control	INC		
R ₁		Resistor	Carbon, 2,000-ohm, 1/2-w.	Dropping resistor	INC		
J ₁	225533A	Jack JK-33-A	Microphone	Mic. input	CTS		SC-D-1585
J ₂	225534A	Jack JK-34-A	Phone	Phone output	CTS		SC-D-1585
P ₁	227155	Plug PL-55	Microphone plug	Mic. input	CTS		SC-D-339
P ₂	227168	Plug PL-68	Phone plug	Phone output	CTS		SC-D-375
SW ₁	328155	Switch SW-155	Toggle, 4-P. D.T.	Interphone - radio	Remler	8905E522	SC-D-4187

INTERPHONE EQUIPMENT RC-99

12. LIST OF MANUFACTURERS

ABBREVIATION	NAME	ADDRESS
A	Aerovox Wireless Corporation	70-82 Washington Street Brooklyn, New York
A H & H	The Arrow-Hart & Hegeman Electric Company	103 Hawthorn Street Hartford, Connecticut
AP	American Phenolic Corporation	1250 West Van Buren Street Chicago, Illinois
C-D	Cornell Dubilier Electric Corporation	South Plainfield, New Jersey
C-H	Cutler-Hammer, Inc.	536 West Wisconsin Avenue Milwaukee, Wisconsin
C.T.	Chicago Transformer Corporation	3501 Addison Street Chicago, Illinois
CTS	Chicago Telephone Supply Company	Elkhart, Indiana
IRC	International Resistance Company	401 North Broad Street Philadelphia, Pennsylvania
LL	Littelfuse Inc.	4757 Ravenswood Avenue Chicago, Illinois
M	Micamold Radio Corporation	1087 Flushing Avenue Brooklyn, New York
OP	Operadio Manufacturing Company	St. Charles, Illinois
Remler	Remler Company, Ltd.	2101 Bryant Street San Francisco, California
W.E.	Western Electric Company	Cicero, Illinois
W-G	Westinghouse Electric Mfg. Company OR General Electric Company	Lima, Ohio OR Fort Wayne, Indiana

SIGNAL CORPS

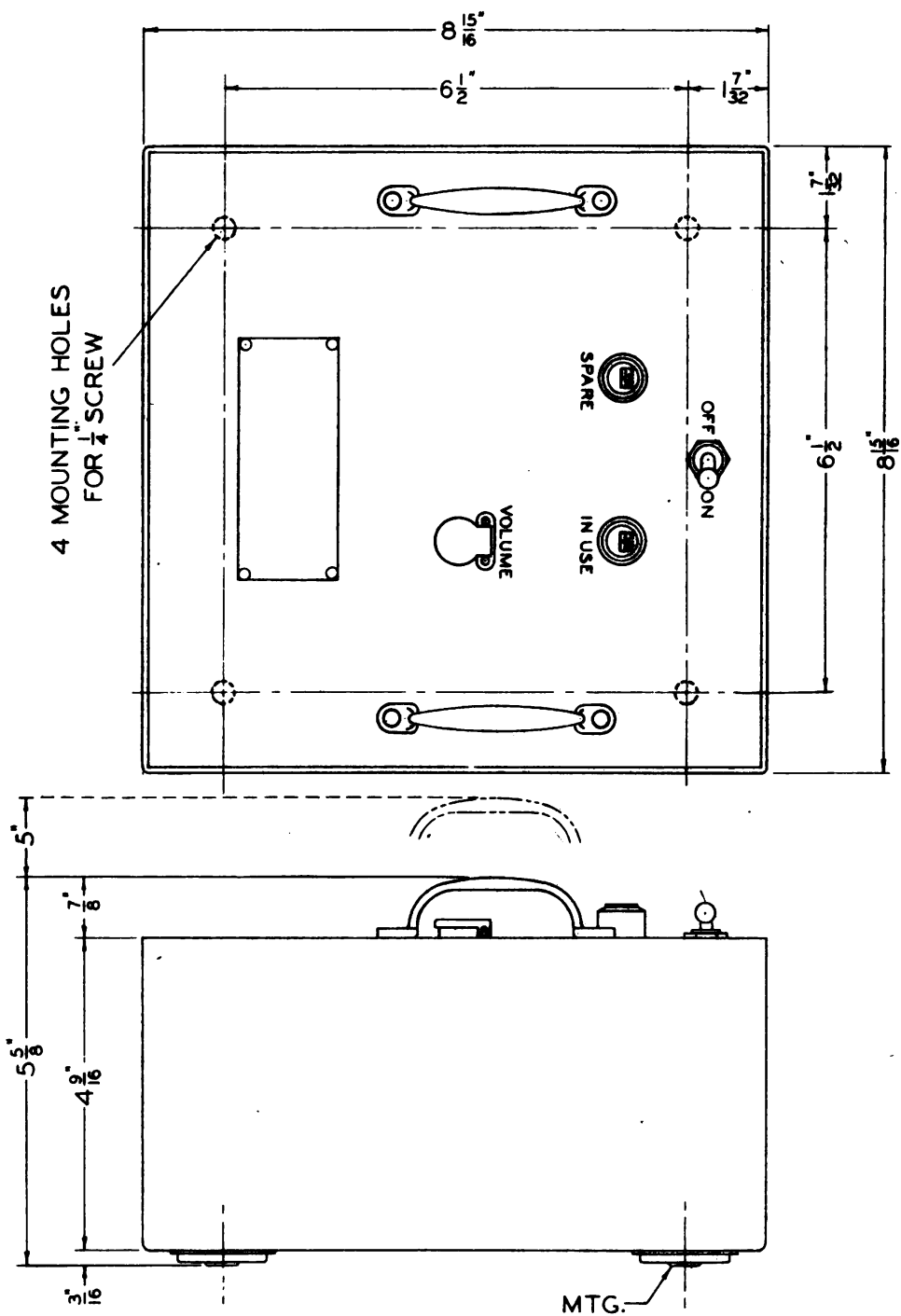


FIGURE II-INTERPHONE AMPLIFIER BC-367 OR BC-667

INTERPHONE EQUIPMENT RC-99

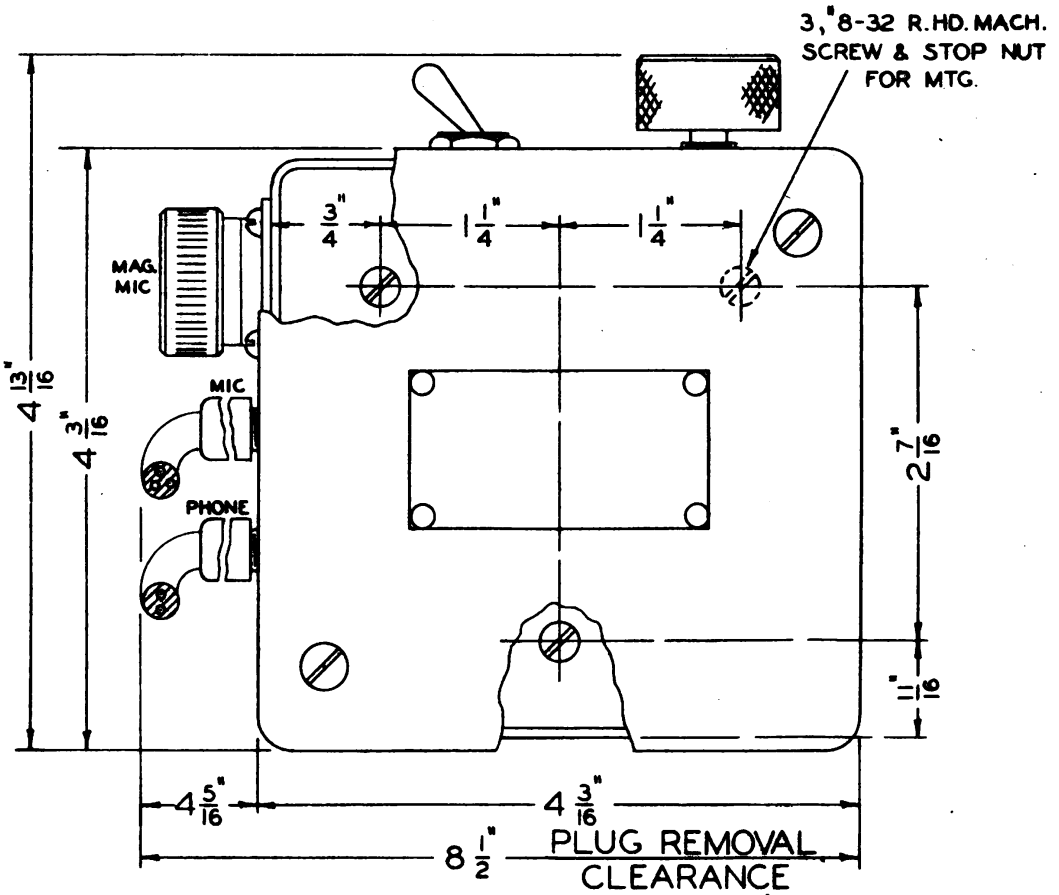
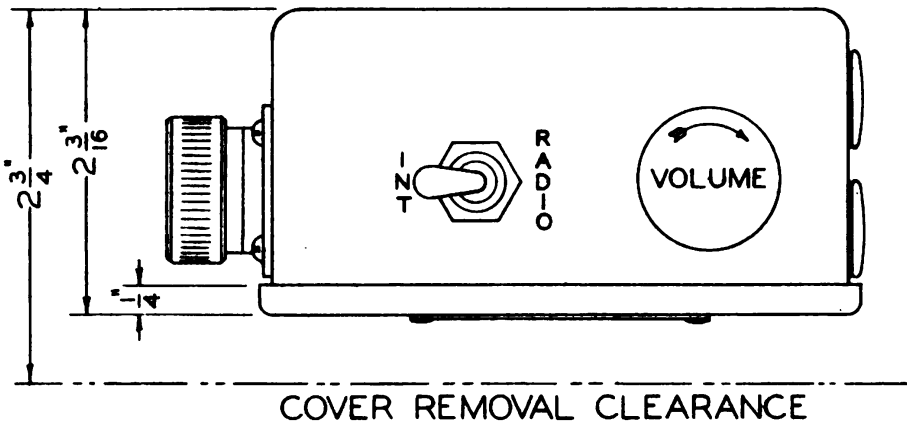


FIGURE 12-CONTROL BOX BC-606-D

SIGNAL CORPS

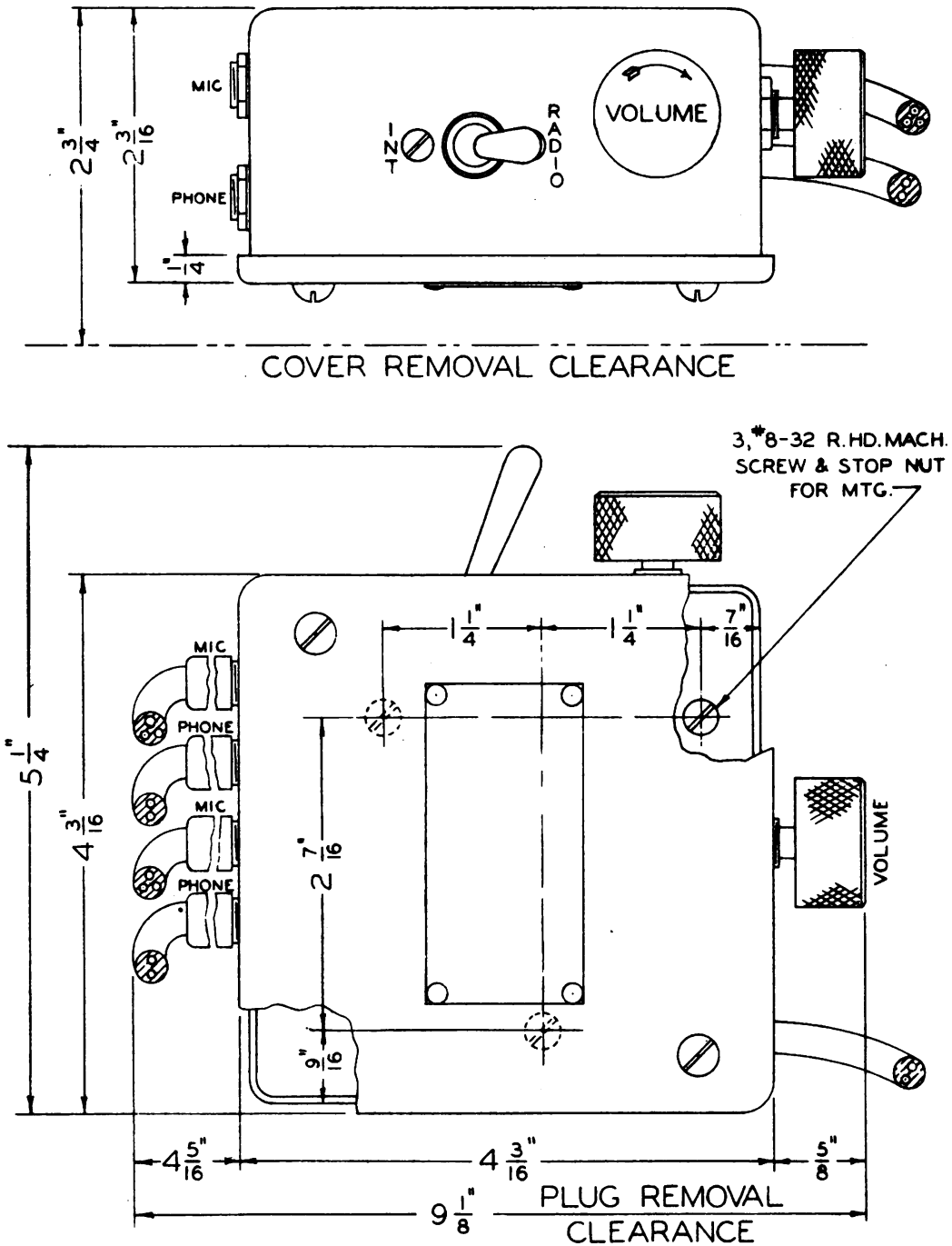


FIGURE 13-CONTROL BOX BC-739

